

likely to be richer in bacteria than the foulest sewage, and they may be exceedingly virulent."

The details for aseptic operations vary according to the ideas of the individual surgeon. The following are the methods we have pursued during the past several years. Street clothes are removed in dressing rooms and replaced by duck suits and tennis shoes. Everything that is brought into the operating room is sterilized either by boiling or steam heat under pressure. Gauze dressings, sponges, pads, gowns, sleeves, towels, sheets and caps are exposed in a steam sterilizer at eighteen pounds pressure for three-fourths of an hour. Sterile catgut and kangaroo tendon are purchased from some reliable dealer. The floor of the operating room is thoroughly mopped and the walls, furniture and fixtures wiped with moist cloths. The operating room is thoroughly fumigated with formalin after septic cases. Draughts are minimized. Septic material is thrown into a well-trapped hopper with sufficient disinfectants. Clean cases always precede septic ones.

The patient, the day before operation, is given a full warm bath and the operating area is shaved and thoroughly cleansed with soap and water. Sterile gauze is used instead of a brush for this purpose. A sterile gauze pad is placed over the seat of operation and held in place by a suitable bandage. When the patient is placed on the operating table, the operating area is thoroughly sponged with Harrington's solution and then gently scrubbed with alcohol. The hands and arms of surgeon and assistants are thoroughly scrubbed with hot running sterile water and soap; sterile gauze being used for scrubbing instead of a brush. Nails are trimmed and cleaned and hands again washed until satisfied they are clean. They are then immersed in Harrington's solution for about thirty seconds and then rinsed in alcohol. Next they are rinsed with a bichlorid solution, 1 to 5000, and the gloves put on. Thin rubber gloves are used in all operations and for dressing wounds. The gloves are sterilized by boiling or by steam heat under pressure. Gloves undoubtedly lessen the danger of infection and prevent the hands from becoming soiled with septic material. Silk wormgut, silk, pagenstecher thread, wire, and all instruments, except cutting instruments, are sterilized by boiling for ten minutes. Edged instruments and needles are immersed in lysol for ten minutes. Caps are worn to prevent dust, dandruff and bacteria from being brushed off into the wound. Sleeves are pinned to the gown and a sterile towel over the front of the gown. These are changed after each operation. Gauze is worn over the nose and mouth. The hands and instruments are frequently washed in warm sterilized salt solution during the operation. All drains are sterilized by boiling, except rubber tissue, which is soaked in bichloride 1 to 1000 and afterward washed off with sterile salt solution.

Great care is taken in the cleansing of all open wounds, especially those of compound fractures. The skin surrounding the wound is thoroughly scrubbed with soap and sterile water, then sponged

with Harrington's solution and washed off with alcohol. The wound is washed out with sterile salt solution, all foreign substances removed and then thoroughly washed with a 10 per cent solution of lysol; the bleeding checked so as to leave the wound as dry as possible and the wound closed. Drainage is employed if there is any oozing or where cavities exist. Abscesses are drained and the cavities filled with a two per cent solution of formalin in glycerin.

In clean cases the wound is dressed with dry sterilized gauze, which is held in place with adhesive plaster or suitable bandages. The wound is dressed the fourth day and the superficial stitches removed. The retaining sutures are removed the eighth day.

We realize that these methods are not perfect, but if they are religiously carried out, good results will be obtained.

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AMEBIC DYSENTERY.*

By J. D. LONG, Passed Assistant Surgeon U. S. P. H. & M. H. S.

Heretofore Amebic Dysentery has been considered almost entirely a disease of tropical countries; it is true that during the past ten years, isolated cases have been reported by observers in various portions of the United States, e. g., Baltimore, Chicago, St. Louis, New Orleans and also in Montreal, Canada, and while it seemed to the observers that these cases had in some unexplainable way originated in the cities where found, there still lingered the feeling that they had really in a more or less roundabout way gotten their infection from the tropics.

In 1907 while on duty at the U. S. Marine Hospital, the writer found three cases of dysentery which, as far as could be determined from the history of the cases, originated in San Francisco or vicinity; the thought then occurred that probably the disease had secured a foothold here, on account of the large number of persons arriving here each year from countries where the disease is known to be endemic. Before it was possible to study the matter further, other duties intervened and the matter was dropped till last year.

About December 1, 1908, a case of dysentery was admitted to the hospital in a man who had lived continuously in San Francisco and vicinity for a number of years. His symptoms had lasted for less than two years. Routine examination of stools was then begun, with the result that since December 1, 1908, a total of forty (40) cases of dysentery have been found, in all these cases living motile amebae have been demonstrated in the stools, and in some cases other parasites, e. g., trichocephalus dispar, un-

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cinaria, anguillula stercoralis, ascaris lumbricoides, trichomonas and cercamonas intestinalis, taenia saginata, and bothriocephalus lotus.

Out of the total number of forty (40) cases fourteen (14) have so far as we can determine originated in this country. One case had never been outside of the State of California; others had been here for periods of from five to twenty-seven years and during these periods had not been outside of the United States except on vessels plying between ports on the Pacific Coast. It is possible that some of these cases were infected in tropical countries, and that some of the others were infected here, as any patient who had been in tropical country within three or four years, was considered to have been infected there.

As a result of observation made during the plague campaign, and as a result of almost six years' experience in the Philippine Islands, with opportunities for observation of agricultural methods in Singapore, China and Japan, I have no hesitation in saying that dysentery has obtained a foothold here. As you all know the vegetable gardens are in the hands of and under the control of Chinese, Japanese and Italians; the Chinese and Japanese at least are aware of the fact that human excrement makes an excellent fertilizer, by mixing it with water and sprinkling it from an ordinary sprinkling can over the tops of the growing vegetables. In the Philippines we used to find in the huts of the Chinese gardeners a jar in which was carefully collected the urine and fecal matter of the gardener and such assistants as he might have. Inasmuch as a large percentage of Chinese, Japanese, Filipinos, etc., have dysentery it may readily be seen how the disease could be distributed. Musgrave produced typical Amebic dysentery with abscess of the liver in a monkey which had been fed on a culture made from the fifth water that had been used to wash a bunch of lettuce. There are not many cooks who wash lettuce, watercress or celery five times in as many changes of water.

Further, amebae have been cultured from lettuce grown in this vicinity; also from tap water and from the water collected from a small creek. Whether they were pathogenic amebae or not was not demonstrated; they were morphologically not to be distinguished from the amebae found in stools, and it is claimed by Musgrave, that any type of ameba may become pathogenic with appropriate environment.

The question is of vital importance to state and country and more detailed investigations should be made for the purpose of determining exactly where the infection lies and how it can be most quickly corrected.

Examination of the chemical analyses of the potable waters of this region shows a fairly high content of organic matter. A very small amount of organic matter is needed in the artificial cultivation of amebae, only .2 gram of beef extract to the liter, hence a few cases of dysentery on a watershed might be responsible for a good many more among the users of the water.

The cases presented varying symptoms, a few

only had diarrhoea, or mucous and bloody stools, probably over half gave symptoms of constipation, some came in with slight jaundice, fever from 101° - 104° , pain in region of liver, and a more or less marked increase in the area of liver dullness.

Two had abscess of the liver on admission and died later on; one of these was infected in San Francisco.

I believe that an examination of the stool will clear up the diagnosis of many a case presenting symptoms of gastric or intestinal disturbance, obstinate or recurring constipation, jaundice, hepatitis, etc.

The treatment consists in the daily administration of quinine enemata, beginning with a 1-8000 solution and gradually increasing the strength and quantity until two liters of a 1-500 solution are taken once daily, if there is fever, enlarged liver, jaundice and a leukocyte count of from 15,000 to 25,000 with the polymorphonuclears running between 75% and 85%, we have been using ipecac in thirty grain doses daily, administered in salol coated capsules, with excellent success.

In favorable and uncomplicated cases two months at least of treatment are required; the treatment may then be stopped and if daily examination of liquid stools for ten days or two weeks show no amebae, the case is probably cured.

The matter of eradication and prevention is an extremely important one and may be best divided into several groups:

- 1st, Legislation. Legislation should be enacted making it an offense punishable by imprisonment without the alternative of a fine for any one owning, controlling or managing a vegetable garden to use human feces, or urine in any manner as a fertilizer, each succeeding offense to be punished with increasing severity.

- 2nd, Inspection. All gardens, truck farms, etc., growing or producing vegetables for sale for human consumption should be rigidly inspected sufficiently often to see that no human excrement is used as a fertilizer and licenses should be issued to the persons controlling the gardens, all cases or crates containing their produce for shipment to have the number of their license upon it, so that if the City Bacteriologist should find amebae or other pathogenic organisms on said vegetables, the garden where they were grown would be known and could be investigated.

3. Education of the people—that fresh vegetables should not be eaten unless very thoroughly cleaned or cooked, and that drinking water be boiled; filtration will not serve as amebae grow through filters sooner or later.

4. Inspections of watersheds to be made and all sources of possible infection to be removed therefrom. It may be that before many years methods of purifying water will be found, whose cost is not prohibitive and the question thus be solved. French writers are now claiming great things from ozone at a cost of about \$14.00 per million gallons.

5. An effective and satisfactory way of disposing of sewage, so that it will be rendered incapable

of producing disease. In a country like this which might be considered as semi-tropical, where frost seldom and snow never comes, the septic tank properly constructed and managed, offers a possible solution, probably not much, if any, more expensive than the present sewage systems, with the advantage that the sewage when it reaches water courses or the ocean can produce no disease of any kind.

It may seem to some that some of the statements made above, are overdrawn and improbable, and that it is not necessary to take the precautions recommended. In reply it can be stated that it is true that all cases of amebic dysentery do not die of the disease, nor do all cases have abscess of the liver, but these facts do remain, the vitality of anyone having dysentery is so lowered as to make the patient very susceptible to intercurrent disease, particularly tuberculosis. We find tubercular processes quite frequently at autopsies on dysenterics. Further, should the disease get a firm foothold it will be as difficult to eradicate as is tuberculosis. Personally, if quick results were desired, I would much prefer to handle an epidemic of Asiatic cholera, plague or smallpox, or any two of these, than to attempt to eradicate amebic dysentery in anything like a reasonable time.

LATENT TUBERCULOSIS: ITS SYMPTOMS, TREATMENT AND PROGNOSIS.*

By DR. MAX ROTHSCHILD, San Francisco.

The attention of the general practitioner ought to be called to a complex of symptoms which is not generally well enough known,—the latent tuberculosis. It might be advisable to give first the history of a number of typical cases that have been under the writer's observation during the last 6 or 8 years, then to give a résumé of these and other similar cases that have been under treatment and afterwards to give a short description of the mode of treatment which seems most efficacious.

Case 1: Miss A., San Francisco. Stenographer, aged 24. One cousin and one aunt died of tuberculosis. Patient herself has never been sick with the exception of children's diseases. Menstruation regular with normal loss of blood. Patient complains of tired feeling and general exhaustion which appears even after very light work. It is the greatest effort for her to perform the duties of her position. She wakes in the morning without feeling rested or refreshed and is so tired in the evening that she can scarcely wait to get through with her dinner so that she may get to bed. No expectoration, no cough, no night sweats, no shortness of breath.

P. C. Patient looks rather delicate, has deep, dark rings under her eyes. The mucous membranes look rather pale. She is well developed, heart normal, lungs normal with the exception of some interrupted breathing in right and left lower lobes. Liver, spleen and kidneys normal. Digestion normal. Blood shows about 80% hemoglobin, about 4,200,000 reds and a normal amount of white cells. Pirquet and Moro reactions both positive. While the temperature of the patient is usually normal and most of the time sub-normal in the early morning, patient had a temperature of 99.8° about 24 hours after an

intravenous injection of 1-3 mgr. of Koch's old tuberculin.

Diagnosis, latent tuberculosis.

Treatment, Blaud's pills internally, intravenous injections of tuberculin and atoxyl twice weekly beginning with 1-5 mgr. of tuberculin and increasing to 1 mgr.

After about three months' treatments patient had gained 18 pounds, general condition much improved, the fatigue having entirely disappeared.

Case 2: Mr. B., Portland. Real estate dealer. Thirty years of age. Referred by Dr. Weeks. Father and sister died of tuberculosis. Best weight of patient was 162 pounds. In the last 3 or 4 years he has gradually lost in weight, now weighing 140 pounds. Patient has no outspoken symptoms of any kind. He "just feels tired and lazy," as he expresses it, with no desire to work and great exhaustion after any efforts of any kind, physical as well as mental.

Examination shows a well built man with rather pale mucous membranes. With the exception of harsh expiratory breathing over the right apex and a light anemic condition (hemoglobin about 80 to 85%) patient appears to be perfectly normal. Moro reaction positive. Twenty hours after an injection of 1-3 mgr. of tuberculin intravenously, temperature 100.2°.

Diagnosis, latent tuberculosis.

Treatment consisted, as in all similar cases, of intravenous injections of tuberculin and atoxyl. Patient gained 20 pounds in four months, then he returned to Portland where he has been working hard ever since. He is perfectly well and enjoying better health than he has for many years.

All cases of latent tuberculosis that have been treated by me, altogether 22 in the last 6 years, showed about the same picture and reacted in the same way to treatment. The symptoms in all cases are very much alike. The prominent features are,—

1st, tuberculosis hereditary in the family.

2nd, exhaustion more or less pronounced after light physical efforts of any kind without any other apparent cause.

3rd, positive Moro reaction, or reaction after an injection of tuberculin of sufficient strength.

4th, light anemic condition. Sometimes interrupted breathing or harshness on auscultation of the whispering voice over some part of the lung.

5th, patients have either lost in weight or are far below the weight which persons of their respective sizes should normally have.

In most cases of latent tuberculosis, the Moro reaction is sufficient for diagnostic purposes and if this reaction is positive an injection of tuberculin will not be necessary for diagnostic purposes. The Pirquet gives the same results as the Moro reaction. It is most interesting that in cases of real latent tuberculosis, the Calmette reaction is usually negative. If this reaction should be positive we have usually to do with a case of active tuberculosis, and so it seems to be possible to draw a line, with the help of these reactions, between the cases of latent tuberculosis and the cases of incipient tuberculosis. My results harmonize with those published by Wolff-Eisner; however, these reactions have to be studied a good deal longer before positive facts can be stated in this respect.

The effect of tuberculin treatment in cases of latent tuberculosis resembles very much the effect

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